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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/754,037	01/08/2004	Prasad Shripad Kadle	DP-310651	6095
22851	7590	11/18/2004	EXAMINER	
DELPHI TECHNOLOGIES, INC. M/C 480-410-202 PO BOX 5052 TROY, MI 48007			FORD, JOHN K	
			ART UNIT	PAPER NUMBER
			3753	

DATE MAILED: 11/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/754,037

Applicant(s)

KADLE ET AL.

Examiner

John K. Ford

Art Unit

3753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☒ Claim(s) 7-11 is/are objected to if rewritten in independent form & correcting 112 problem
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 4/2/04 (cert of mail)
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, line 11, a heat pump expansion device for exchanging heat with the refrigerant in said heat pump mode is misdescriptive. It should read - - a heat pump expansion device for reducing the pressure of the refrigerant in said heat pump mode - -. Correct? As well, claim 1 reads as a "laundry list" of parts without operative connections specified in a refrigeration circuit connecting these components.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Okawara (USP 6,422,308).

A compressor is shown at 2, front end condenser at 3, chiller-condenser at Ea, chiller-evaporator at Eb and two 2-way valves Vs1 and Vs2 functioning as a three-way valve. A bypass line B is shown. Valve 5b is a bypass valve that directs flow through a heat pump expansion device 31 during a heat pump mode. Chiller evaporator Eb functions as an evaporator during the heat pump mode.

Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combine teachings of Okawara '308 and Enomoto (5,291,941)

Okawara has been described above. Enomoto teaches that the two-way valves 181 and 182 controlling the condenser path (11) and bypass path (20) can be replaced by a single three way valve (see col. 6, lines 1-2). Because valves 181 and 182 function identically to Vs1 and Vs2 of Okawara, it would have been obvious to have replaced Okawara's valves Vs1 and Vs2 by a single three way valve to advantageously reduce the "part count" and hence lower manufacturing costs.

Moreover, to have moved valve 5a of Okawara to a point immediately downstream of Vc1 (before the rejoining of the bypass B) would have been obvious in view of Enomoto teaching this location for valve 13. Regarding claim 3, all the prior references show this. Refrigeration systems are inoperative without it. Regarding claim 4, an accumulator 15 is shown at the compressor inlet in Enomoto. To have used a conventional accumulator/drier at the inlet to the compressor of Okawara to prevent corrosion damage and minimize the possibility of "slugging" the compressor would have been obvious. See USP 5,491,983 for a typical accumulator/dehydrator.

Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okawara/Enomoto as applied to claims 1-4 above, and further in view of Hirota (JP 11-301254) or Baker (6,230,508).

Okawara and Enomoto both teach conventional evaporators and condensers that transfer heat or cold energy from the refrigerant to air. See specifically Eb and Ea of Okawara that are arranged so as to serially connected with respect to the air flow to the compartment.

Such refrigerant to air heat exchangers as taught by Okawara at Eb and Ea are disadvantageous from two points of view. First, if the refrigerant is dangerous (see Hirota's Abstract) it would potentially leak into the compartment in an accident. Second, as pointed out by Baker, such systems have no "reservoir capacity" to condition the compartment when the compressor cycles on and off, leading to mildly uncomfortable oscillations in air discharge temperature.

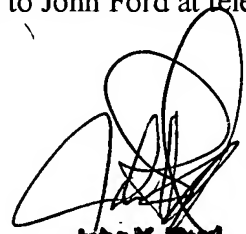
Both Hirota and Baker teach, as a solution to these problems, the use of a secondary liquid loop to transport the heat or cold from the heat exchanger (evaporator or condenser) through a pumped liquid conduit to a heat exchanger located in the cabin thereby advantageously avoiding the accidental discharge of dangerous refrigerant and advantageously permitting some storage capacity for heat or cold to "even out" discharge temperatures.

To have piped liquid through heat exchangers Eb and Ea of Okawara (instead of air) and to have transported, via a liquid piping system, that heating/cooling energy to a liquid-to-air heat exchanger located in the passenger compartment would have been obvious for the two reasons discussed above.

Art Unit: 3753

Claims 7 - 11 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication should be directed to John Ford at telephone number (703) 308-2636.

A handwritten signature in black ink, appearing to be "John K. Ford", written over a printed name and title.

**John K. Ford**  
**Primary Examiner**